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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

Sub-Committee of Experts on the Transport of Dangerous Goods
(Thirteenth session,
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agenda item (5 (b))

GLOBAL HARMONIZATION OF SYSTEMS OF CLASSIFICATION AND LABELLING OF CHEMICALS

Physical hazards

Implementation of Agenda 21
Classification of organic peroxides

Transmitted by the Expert from Germany

Introduction

Organic peroxides are defined according to their chemical structure, i.e. they contain a bivalent -O-O- structure. The joint report of the Working Groups on criteria for flammability and for reactivity (document ST/SG/AC.10/R.547) summarizes the degree of current consensus concerning a globally harmonized classification of organic peroxides as follows:

Physical state:	solid and liquid
Property:	oxidising, explosibility, sensitiveness, thermal stability
Tests and criteria:	1. the UN scheme, test series A to H, but sub-divisions may not be necessary for all systems 2. lower cut-off level was not agreed, and will need to be resolved
Comments:	the difference between the EU supply side lower cut-off value and that for the UN transport system needs further discussion

Two proposals are made below to support the discussion in the meeting of the joint ILO/UNCETDG Working Group in July 1997 in Geneva.

Properties

The report of the Working Group on harmonization of classification criteria for reactive substances (ST/SG/AC.10/C.3/20/Add. 2) stated in paragraph 11 that "the Working Group recognized that organic peroxides could not be regarded as oxidizing substances". In fact, the oxygen balance of organic peroxides is negative, i.e. the organic peroxide molecules contain less oxygen than they themselves would need for a complete combustion without contribution of an additional oxidizer - air for instance.

Proposal: *Delete oxidising from the properties listed above.*

Lower cut-off level

Particularly for mixtures or solutions containing organic peroxides the available oxygen is used as a criterion to decide whether a product under consideration is to be regarded as dangerous or not without any additional testing. This lower cut-off level is different in the classification systems mainly regarded: 0.5 % in the EC System and 1.0 % in the UN System.

By document ST/SG/AC.10/C.3/R.775, the observer from the European Commission made clear what the background for the more stringent criteria in the EC System was. During handling and use a peroxide might be exposed to conditions totally different from storage and transport conditions. The general principles of the global harmonization clearly say that harmonization should not result in a lower level of protection for human kind and the environment. Therefore the document also submitted a proposal how the safety level in handling and use can be kept with no additional testing burdens for transport (and also for storage) purposes. This proposal is quoted below as option 2.

The simplest way to consider the safety needs in handling and use is to accept the more stringent cut-off level also for transport and use. This solution, which is referred to below as option 1, would require a somewhat larger number of products to be tested according to test series A to H.

A third proposal - option 3 - was not yet discussed, but could be a compromise position as follows:

The thermal stability of organic peroxides is an important safety factor for storage and transport as well as in other forms of handling.Therefore, the UN System allows organic peroxides only to be considered for exemption (exit G of the classification flow chart) if no temperature control is required. A compromise proposal is to agree on a cut-off level of 0.5 % only for those organic peroxides for which temperature control is required (test series H), and on a cut-off level of 1.0 % if no temperature control is required.

Proposal: *To agree on one of the following options.*

Option 1: Organic peroxides are to be considered for classification according to the more stringent EC calculation criteria.

Option 2: Organic peroxides are to be considered for classification according to the more stringent EC calculation criteria, but those organic peroxides falling between the EC and UN cut-off-levels are considered for transport as type G peroxides without requiring any further testing.

Option 3: Organic peroxides are to be considered for classification unless the formulation contains:

- *not more than 1.0 % available oxygen from the organic peroxide when containing not more than 1.0 % hydrogen peroxide and no temperature control is required;*
- *or*
- *not more then 0.5 % available oxygen from the organic peroxides when containing more than 1.0 % but no more than 7 % hydrogen peroxide or temperature control is required.*